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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,560	07/19/2000	Jane C. Cheng	2000	2046

23455 7590 06/08/2004

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EXAMINER	
GRIFFIN, WALTER DEAN	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 06/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/619,560	CHENG ET AL.	
	Examiner	Art Unit	
	Walter D. Griffin	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14,16-24,27 and 28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-14,16-24,27 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-14, 16-24, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman (3,385,906) in view of Cheng et al. (5,557,024).

The Kaufman reference teaches a process for producing cumene by alkylation followed by transalkylation of diisopropyl benzene. Specifically, the Kaufman reference teaches the reaction of benzene with propylene in the presence of an alkylation catalyst to produce cumene.

See column 5, lines 41-43. The resulting cumene-containing product is separated to remove a majority of the cumene. The remaining effluent is then combined with benzene and is transalkylated. See 2, lines 15-25. This transalkylation step would necessarily produce by-products as claimed. The Kaufman reference teaches Zeolite Y as a preferred molecular sieve for use in preparing transalkylation catalysts. See column 3, lines 49-50. The Kaufman reference also teaches the liquid phase conditions referred to in claim 11 through the language in column 6 lines 25-26 referring to "benzene and liquefied propylene" and through the conditions referred to in column 5, lines 4-15. Kaufman teaches temperature conditions ranging from 130°C to 250°C, and pressure conditions ranging from 75 psig to about 450 psig (5.2 – 31 Bar) with conditions preferably at 95 psig to 145 psig to maintain the liquid phase. See column 5 lines 4-20.

The Kaufman reference does not disclose the mixture of two different molecular sieves and does not disclose a process whereby the transalkylation catalyst is produced by co-extrusion as described in claim 6. Kaufman also does not teach a weight percentage of the transalkylation catalyst as it relates to the crystalline sieves as in claims 5 and 18. Kaufman also does not teach the alkylation catalyst of claim 14.

The Cheng reference teaches the use of MCM-49, MCM-22, zeolite Y, zeolite beta, and mordenite as transalkylation catalysts. See col. 14, lines 27-30. It also teaches the use of MCM-56 as an alkylation catalyst as in claim 14. See column 1. Furthermore, the reference uses TEA mordenite as a transalkylation catalyst as in claim 4. See column 14, lines 34-39. The Cheng reference teaches forming a catalyst by extrusion. See Examples 11 and 12, column 21.

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the process of Kaufman by utilizing a combination of catalysts as

claimed because Cheng discloses that each of these substances is individually used as transalkylation catalysts. Therefore, the use of a combination of them including the claimed combination, in any weight percent including those claimed, to serve as a transalkylation catalyst would be expected to result in effective transalkylation. In re Kerkhoven, 626 F.2d 846, 850 (CCPA 1980).

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kaufman by co-extruding the catalyst because Cheng discloses extrusion as a common method for production of a catalyst. Therefore, co-extrusion of two of more zeolites would be expected to produce a catalyst.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kaufman by utilizing MCM-56 alkylation catalyst as disclosed by Cheng because MCM- 56 has high activity and selectivity for the desired alkylated product.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized TEA-mordenite having a crystal size as claimed because it is an effective transalkylation catalyst as disclosed by Cheng and any crystal size that results in effective contact between the feed and catalyst would be expected to function effectively in the process.

Response to Arguments

The argument that the decision in *In re Kerkoven* does not apply to the present invention because catalytic effects are not predictable is not persuasive. While the examiner agrees that

catalytic effects are generally unpredictable, the Cheng reference clearly discloses that catalysts comprising MCM-22, MCM-49, zeolite Y, zeolite beta, and mordenite are suitable transalkylation catalysts. It is not as if each of these catalysts is disclosed as being effective for processes other than transalkylation with no mention of their suitability for use in a transalkylation process. If that were the case, then the examiner agrees that one could not predict the effectiveness of these catalysts in a transalkylation process. However, since each is known to be effective for transalkylation, the examiner maintains that one could predict with a high degree of certainty that a mixture of any of these catalysts would be effective to some extent in a transalkylation process.

The argument that the Cheng reference teaches away from the use of a combination of the catalysts is not persuasive. One having ordinary skill in the art would expect any combination of known effective transalkylation catalysts to be effective in a transalkylation process.

The argument that there would be no motivation to combine catalysts that operate optimally at different conditions is not persuasive. There is no evidence that the effective operating conditions for any one of the catalysts disclosed by Cheng is different from any other disclosed catalyst.

The argument that the applied references do not teach or suggest the unexpected improvements is not persuasive. The evidence to support the assertion of unexpected results is not commensurate in scope with the claims. The data are obtained through the use of mixtures of MCM-22 and TEA-mordenite and MCM-22 and zeolite beta. The claims do not appear to be limited to these combinations. Additionally, the argument that any unexpected benefit from the

use of a mixture of catalysts is not limited to the range established by the data is not persuasive. Applicants own argument that catalysts are unpredictable would seem to refute this argument.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is (571) 272-1447. The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Walter D. Griffin
Primary Examiner
Art Unit 1764

WG
June 4, 2004